

## **A LOW COST SOLAR ENERGY CONVERSION SYSTEM FOR DOMESTIC COOKING USING ALUMINIUM THIN FOIL**

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### **Abstract**

The domain of solar energy conversion has always been an area of continuous research and development. The technology and topologies related with conversion of solar energy using various mediums have taken great strides since the then era of high cost voluminous panels to the present thin film technology minimizing the size of panels. The recent developments are dominated by a host of studies which meticulously present the use of thin films in conversion of solar energy for large power generation ranging from 1 MW to 10 MW along with minimizing the space requirements. But, there is dearth of studies which cater to the requirement of developing a low cost solar energy conversion system which is suitable for small power requirement at domestic level specifically for rural areas meeting the objective of shifting smartly to the non-conventional renewable energy sources. The present study is a small attempt to suggest solution to the day by day depleting energy sources like wood, coal, and farm residues etc. which are used for domestic cooking in rural areas remotely situated away from electrical infrastructure. The present study deals with analyzing the effectiveness of various materials, with different reflectivity, like aluminium, glass, and thin foil of aluminium in concentrating the solar flux. The thin foil is used in packing of the fast food items for keeping it hot and ready to serve. The present study explored the possibility of using the otherwise very low cost thin foil having a good amount of reflectivity as a reflector in paraboloid dish for cooking the food. The present simple yet formidable study experimentally proves the utility of thin foil in developing a very low cost solar energy conversion system for domestic cooking which can be suitably applied to rural areas situated remotely. The paraboloid dish for this purpose can be prepared with the help of thin bamboo sticks in the form of an umbrella, which are also readily available and in use in the rural

areas for carrying the small loads on head. Future studies in this regard may deal with the design of the paraboloid or similar shape using thin bamboo sticks that can give more concentration ratio.

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